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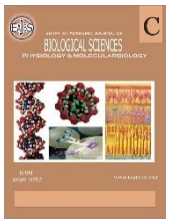
Citation: *Egypt.Acad.J.Biolog.Sci. (C.Physiology and Molecular biology) Vol. 16(2) pp375-386 (2024)*
DOI: 10.21608/EAJBSC.2024.396029

Egypt. Acad. J. Biolog. Sci., 16(2):375-386 (2024)

Egyptian Academic Journal of Biological Sciences
C. Physiology & Molecular Biology
ISSN 2090-0767
www.eajbsc.journals.ekb.eg



Prevalence and Risk Factors of Diabetic Complications in Al Baha, Saudi Arabia: A Comprehensive Study

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ARTICLE INFO
Article History
Received:5/10/2024
Accepted:9/12/2024
Available:13/12/2024

Keywords:
Diabetes; Diabetic complications; Prevalence; Retinopathy; Glycaemic Control.
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ABSTRACT

Diabetes mellitus (DM) is a serious global public health issue, leading to considerable morbidity and mortality due to its consequences. Evaluation of the prevalence of diabetes complications and identification of related demographic, socioeconomic, and lifestyle variables among diabetic patients in Al Baha, KSA was done. In the present study, the influence of these problems on healthcare consumption and expenses was determined and the efficacy of current public health measures in addressing and alleviating these complications was assessed. A cross-sectional analysis was performed on n = 165 diabetic patients, utilizing data obtained from structured questionnaires and medical records. Statistical test ANOVA was performed, and odds ratio was calculated considering the statistical significance cut off $p < 0.05$. The findings showed that 38.8% of patients experienced one or more diabetes complications, with diabetic retinopathy being the most prevalent at 30.9%, followed by nephropathy at 3.6% and foot ulcers at 1.8%. Elevated HbA1c levels were substantially correlated with the incidence of retinopathy ($p = 0.009$). Variables like age, gender, and socioeconomic level were identified as influencing the chance of developing problems. The difficulties markedly increased healthcare consumption, resulting in a large surge in related expenses. This study highlights the critical necessity for focused public health initiatives to alleviate the impact of diabetes and enhance patient outcomes in the Al Baha region.

INTRODUCTION

In the 21st century, diabetes mellitus (DM) has emerged as a critical global health issue. Diabetes is defined by chronic hyperglycemia resulting from dysfunctions in insulin production, its action, or both. Diabetes manifests primarily in two forms: Type 1 diabetes (T1DM), an autoimmune condition wherein the immune system attacks and destroys pancreatic beta cells responsible for insulin production, and Type 2 diabetes (T2DM), predominantly characterized by insulin resistance and a gradual decline in beta-cell functionality (Reddy *et al.*, 2023). The International Diabetes Federation (IDF) estimates that in 2021, around 537 million adults aged 20-79 worldwide have diabetes, representing about 10.5% of the global adult population. This amount is expected to rise to 643 million by 2030 and thereafter to 783 million by 2045 (IDF, 2021). A multitude of causes drives this swift escalation, including aging demographics, urbanization, the worldwide surge in obesity, detrimental food habits, and sedentary lifestyles (Amos *et al.*, 1997; Lin *et al.*, 2020).

Type 2 diabetes, comprising approximately 90% of all cases, is markedly rising in low- and middle-income nations due to lifestyle and dietary changes induced by urbanization (Rhee *et al.* 2020). Type 1 diabetes, although less common, is also on the rise, particularly among younger populations (Patterson *et al.*, 2019). Diabetes, in addition to its increasing incidence, presents a significant risk due to its serious consequences, which encompass cardiovascular disorders (including heart attacks and strokes), renal failure, blindness, and lower-limb amputations, resulting in considerable morbidity, diminished quality of life, and premature mortality (Zheng *et al.*, 2018). The economic ramifications of diabetes are significant, with worldwide health expenditures amounting to USD 966 billion in 2021, projected to rise to USD 1.05 trillion by 2030 (Bommer *et al.*, 2018).

The global prevalence of diabetes exhibits significant geographic variation. Regions such as the Western Pacific, Southeast Asia, and the Middle East and North Africa (MENA) are particularly burdened by high diabetes rates. For example, China and India, the two most populous countries, account for the highest absolute number of individuals with diabetes, largely due to rapid urbanization, dietary changes, and sedentary lifestyles (Pradeepa and Mohan, 2021; Han *et al.*, 2019; Rhee *et al.*, 2020). On the other hand, sub-Saharan Africa, although currently experiencing the lowest prevalence of diabetes, is witnessing a swift rise in cases as lifestyles change and urbanization progresses (Pastakia *et al.*, 2017). This worldwide trend highlights the increasing and widespread prevalence of diabetes, which presents substantial health and economic burdens. The prevalence of diabetes in the MENA area has reached epidemic levels. By 2021, the incidence of diabetes in the MENA area was estimated to reach 16.2%, with an estimated 73 million persons affected (IDF, 2021). The significant growth is augmenting the prevalence of diabetes complications such as cardiovascular illnesses, neuropathy, and nephropathy, which worsen morbidity and escalate healthcare expenses (Deshpande *et al.* 2008). Specifically, Saudi Arabia is confronted with one of the most severe diabetes epidemics worldwide, with a prevalence rate of about 24% among its adult population (Robert *et al.*, 2018). This elevated incidence, influenced by lifestyle elements such as obesity, lack of physical exercise, and poor dietary habits, highlights the pressing need for public health measures that prioritize prevention, early identification, and efficient treatment of diseases. Unless these variables are addressed by concerted efforts, the diabetes burden in the area is expected to persistently increase, resulting in substantial long-term health and economic consequences. The incidence of diabetes is notably elevated in those aged 40 and older, resulting in a diverse array of health problems: Cardiovascular Diseases (CVD): Systematic studies repeatedly show that diabetes greatly increases the susceptibility to cardiovascular disorders (Emerging Risk Factors Collaboration, 2007). Effective control of blood glucose levels, blood pressure, and cholesterol has been shown to significantly decrease these risks (Einarson *et al.*, 2018). Diabetes-related neuropathy, impacting as many as 50% of individuals with diabetes, significantly contributes to impairment (Callaghan *et al.*, 2012). Prompt identification and precise management of blood sugar levels are essential for minimizing the impact of neuropathy (Pop-Busui *et al.*, 2017). Approximately 20-40% of diabetic patients are affected with diabetic nephropathy, which is the primary cause of chronic kidney disease (CKD) and end-stage renal disease (ESRD) globally (Thomas *et al.*, 2015). Chronic hyperglycemia hampers the kidneys' ability to filter substances, thereby deteriorating kidney health. Effective management of blood glucose and blood pressure is crucial in decelerating the advancement of nephropathy (Mahaffey *et al.* 2019; Neuen *et al.* 2018). Diabetic retinopathy is a significant contributor to vision loss, impacting over

33% of those diagnosed with diabetes (Kropp *et al.*, 2023; Yau *et al.*, 2012). Ensuring regular eye examinations and maintaining optimal glycemic management may effectively prevent or postpone vision loss resulting from retinopathy (Cheung *et al.* 2010). Diabetic individuals often get foot ulcers, which may be attributed to a combination of neuropathy and inadequate blood circulation (Armstrong *et al.*, 2017).

Numerous variables may have a substantial impact on the frequency and intensity of diabetes complications in the area. Analyzing the role of these variables in the development of comorbidities such as cardiovascular disease, neuropathy, nephropathy, retinopathy, and foot ulcers is crucial for customizing successful public health treatments. Diabetic complications are a primary factor in morbidity and death, and each complication leads to a substantial decrease in quality of life and a rise in healthcare expenses. Through an analysis of the particular trends and risk elements linked to diabetic complications in Al Baha, healthcare professionals, and policymakers may develop more focused approaches to enhance the control and prevention of diabetes. This, in turn, might help mitigate the overall impact of the illness in the area, improving patient outcomes and decreasing healthcare costs. Multiple studies have shown that differences in the occurrence of diabetes-related problems across different regions are often associated with local lifestyle practices, healthcare accessibility, and socioeconomic classification (Al-Hanawi, 2021). In Al Baha, the combination of restricted availability of specialist diabetic treatment, sedentary lifestyles, and dietary habits may worsen these outcomes. Hence, it is crucial to conduct a comprehensive examination of the requirements and difficulties of the area to develop suitable measures targeted at averting problems and enhancing patient care results. Long-term risk factors, smaller sample size and lack of involvement of multi-centre study highlights the limitation of the study.

MATERIALS AND METHODS

1- Sample Size:

This research was a retrospective cross-sectional analysis that used archived medical records and test results of blood samples obtained from the biochemistry laboratory for Hb1Ac at King Fahad Hospital in the Al-Baha area of Saudi Arabia. The research included 165 diabetic patients, aged 20 and older, who sought specialized care at the hospital's chronic illness clinics. The research data were collected by the authors across the time frame from January 2017 to September 2022. Given the premise that the occurrence of prediabetic disorders is 20.0% as reported in published research conducted in the Al Baha area of Saudi Arabia (Alomari and Al Hisnah, 2022), we needed 82 persons. However, to achieve a 95% confidence level according to the below-mentioned formula, we added more than 100% additional samples to overcome no response rate and ended up with a total of 165 persons.

$$n = \frac{Z^2\, p\,(1-p)}{d^2} \qquad (1)$$

2-Study Setting:

This study was conducted at King Fahad Hospital in Al-Baha, Saudi Arabia, which is accredited by CBAHI, the Saudi Arabian Central Board for Accreditation of Healthcare Facilities. The aforementioned hospital gets patient referrals from adjacent clinics, private hospitals, and other health organizations.

3-Study Design:

Between January 2017 and September 2022, this cross-sectional research was carried out at King Fahad Hospital, Al-Baha. The study included all individuals with Type 2 diabetes who were registered in the chronic illness clinics of the Ministry of Health in Al Baha city. Exclusion criteria included those with significant mental or cognitive impairments. Data were gathered from the patient medical records and laboratory test results accessible via the Electronic Medical Record (EMR) system of the OASIS program. For this objective, a standardized data-gathering sheet in Excel format was employed. A study conducted at KFH examined the frequency of diabetes and its consequences in persons of all age groups

(over 20) and genders (male and female). This research included individuals who are undergoing therapy as both inpatients and outpatients.

4-Data Collection:

Predefined data variables were established, and a standardized data collecting sheet was created to collect patient data from the Electronic Medical Records (EMR) and laboratory findings of the OASIS program. The maintenance of data integrity and confidentiality was guaranteed. The data was thoroughly verified and organized into four distinct pieces; the first component encompasses sociodemographic information, age, gender, occupation, income, educational level, family history of diabetes, and smoking status. The second section examines the risk factors associated with diabetes complications, including obesity, impaired blood sugar management, hypertension, hypercholesterolemia, and lack of physical exercise. The third section includes the analysis of the historical length of diabetes, the current state of diabetic management, the HbA1c level, and the specific treatment approach. The last part concentrated on the persistent sequelae of diabetes mellitus. Dyslipidaemia, diabetic retinopathy, diabetic nephropathy, and diabetic foot are examples of chronic complications associated with diabetes. The ocular abnormalities include retinopathy, cataracts, and visual impairment. Nephropathy includes the presence of microalbuminuria and macroalbuminuria, as well as progressive renal deterioration and failure. Diabetic foot complications often manifest as foot ulcers or amputation.

5-Statistical Analysis:

Statistical analysis of data using SPSS version 27 was conducted to examine the frequency and risk variables of diabetes complications in Al Baha, Saudi Arabia. Descriptive data, including frequencies and percentages, were used to gather the epidemiology of diabetes complications, risk factors, and sociodemographic features. ANOVA and correlation tests were used to compare means and evaluate relationships between variables for continuous variables like age and HbA1c levels. Using chi-square tests, categorical factors such as gender were examined to assess variations in the prevalence of diabetic complications among different groups. A multinomial logistic regression model was used to look at the relationship between age, HbA1c levels, and the chance of having diabetic complications. After accounting for potential confounders, this model calculated the odds ratios (ORs) and 95% confidence intervals (CIs) for each predictor to evaluate the degree of correlation with the existence and severity of complications. The $p < 0.05$, statistical significance was established.

RESULTS

1-Prevalence of Diabetic Complications:

The research included n = 165 individuals diagnosed with diabetes. Out of the cohort, 61.2% (n = 101) did not have any complications, while 30.9% (n = 51) only had diabetic retinopathy. The prevalence of diabetic nephropathy was 3.6% (n = 6) among the patients, whereas 1.8% (n = 3) had diabetic foot problems. The breakdown of various complications by age group (20-40, 41-60, 61-80, and above 80) and gender (male and female) is shown in Table (1). Figure 1 and Figure 2 depict the prevalence of complications throughout the various demographic categories, as categorized by age and gender. The dominant age group among patients was those aged 41-60, accounting for 60.6% of the total, followed by those aged between 61-80 years, at 31.5%. Out of the patients in the middle age group (41-60), 65% did not have any problems. However, 28% of them had diabetic retinopathy, 2% had both diabetic nephropathy and diabetic foot, and 3% had diabetic retinopathy together with dyslipidaemia. Among those aged 61-80, 36.5% were diagnosed with diabetic retinopathy, whereas 7.7% had nephropathy. Equally, half of the individuals aged 80 and beyond had diabetic retinopathy, while the other half did not have any issues.

Table 1: Prevalence of diabetic complication in age groups and gender.

Parameters	Age Years				Gender	
	20-40	41-60	61-80	Above 80	Male	Female
No complication	8 (72.7)	65 (65.0)	27 (51.9)	1 (50.0)	38 (23.0)	63 (61.8)
Diabetic Retinopathy and Dyslipidaemia	0 (0.0)	3 (3.0)	1 (1.9)	0 (0.0)	0 (0.0)	4 (3.9)
Diabetic Retinopathy alone	3 (27.3)	28 (28.0)	19 (36.5)	1 (50.0)	22 (34.9)	29 (28.4)
Diabetic Nephropathy	0 (0.0)	2 (2.0)	4 (7.7)	0 (0.0)	1 (1.6)	5 (4.9)
Diabetic Foot	0 (0.0)	2 (2.0)	1 (1.9)	0 (0.0)	2 (3.2)	1 (1.0)
Total N (%)	**11 (6.7)**	**100 (60.6)**	**52 (31.5)**	**2 (1.2)**	**63 (38.2)**	**102 (61.8)**

The statistical examination of gender showed that the occurrence of diabetic retinopathy was greater in men (34.9%) than in females (28.4%). Nevertheless, the pattern revealed by diabetic nephropathy saw a reversal, as a higher proportion of female patients, accounting for 4.9% which is almost 300% more than that of male patients, encountered the condition. A mere 4 female patients were found to have both diabetic retinopathy and dyslipidemia, contributing to an overall prevalence rate of 3.9%.

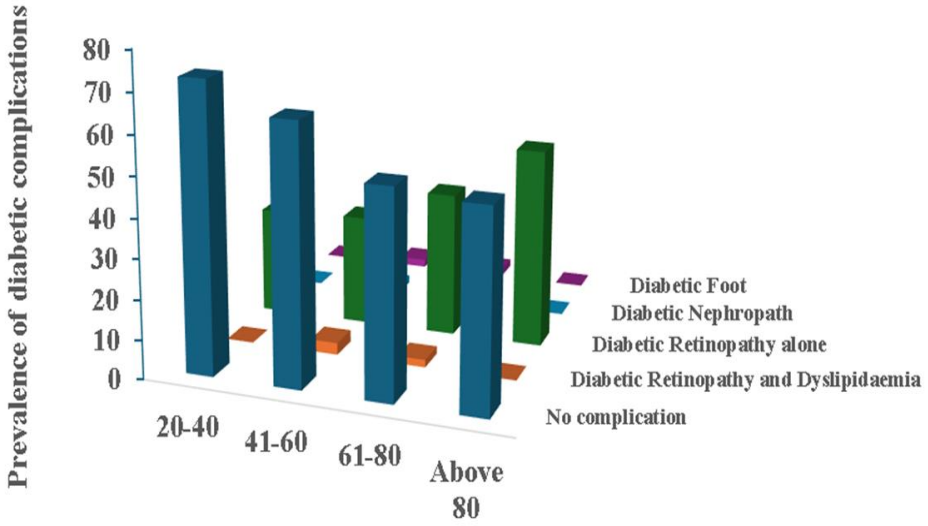

Fig. 1: Bar chart showing the prevalence of diabetic complications by age group.

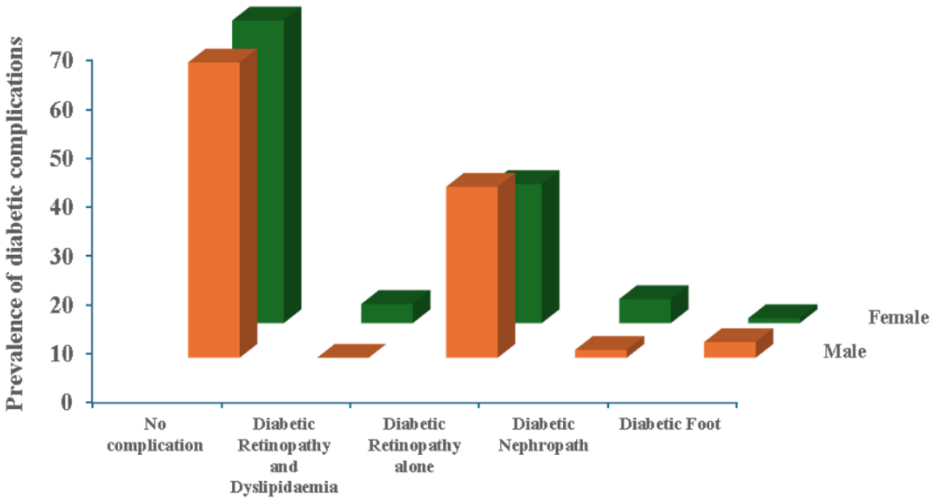

Fig. 2: Bar chart showing the prevalence of diabetic complications by gender.

2-ANOVA and Multinomial Logistic Regression:

The ANOVA findings indicated that there was no statistically significant difference in age across the various complication groups (F = 1.084, p = 0.366). Significantly different HbA1c levels were seen across the complication groups (F = 2.766, p = 0.029), with greater levels of HbA1c linked to the occurrence of problems, including diabetic retinopathy (Table 2). The obtained Pearsons's correlation coefficient (r = 0.054, p = 0.492) suggests a little positive connection between age and HbA1c levels (Table 3). This implies that as age grows, there is a tendency for HbA1c levels to gradually increase. Nevertheless, the observed link lacks statistical significance (p > 0.05), indicating that age by itself does not have a substantial impact on HbA1c levels within this particular group. This limited link suggests that other variables, such as lifestyle, disease treatment, and individual health problems, may have a greater influence on glycaemic control than age alone in the group under investigation.

Table 2: ANOVA results for age and HbA1c levels.

		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Age	Between Groups	578.937	4	144.734	1.084	0.366
	Within Groups	21360.856	160	133.505		
	Total	21939.794	164			
HbA1c Level > 6	Between Groups	31.497	4	7.874	2.766	0.029
	Within Groups	455.540	160	2.847		
	Total	487.037	164			

Table 3: Correlation between age and HbA1c levels.

		Age	**HbA1c Level > 6**
Age	Pearson Correlation	1	0.054
	Sig. (2-tailed)	-	0.492
	N	165	165
HbA1c Level > 6	Pearson Correlation	0.054	1
	Sig. (2-tailed)	0.492	-
	N	165	165

The multinomial logistic regression analysis revealed a substantial prediction of diabetic retinopathy manifestation by HbA1c levels**.** Figure 3, illustrates the connection between HbA1c levels and age in middle-aged individuals (40-60 years) who had their HbA1c levels assessed. Analysis of the scatter plot reveals that the data points are scattered without any distinct upward or downward trend, suggesting the absence of a robust linear correlation between age and HbA1c levels. This corroborates the modest positive connection (r = 0.054) identified in the statistical investigation. The lack of statistical significance (p = 0.492) in the connection implies that age alone does not significantly affect glycaemic control (HbA1c levels) in the reviewed group.

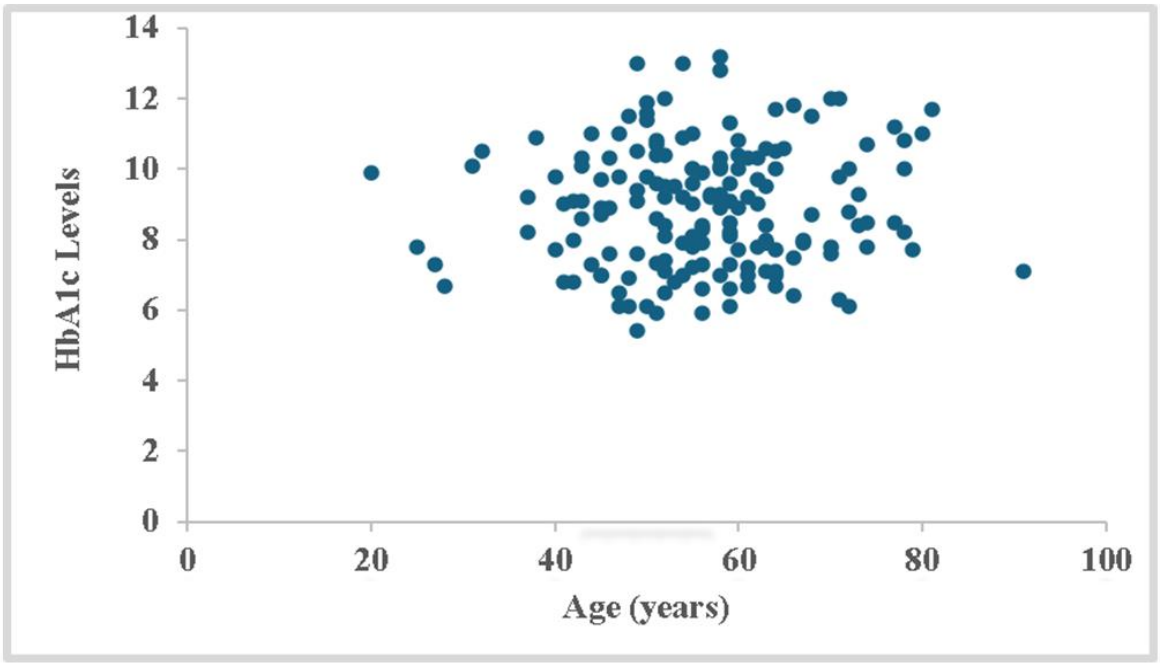

Fig. 3: Scatter plot showing the correlation between age and HbA1c levels.

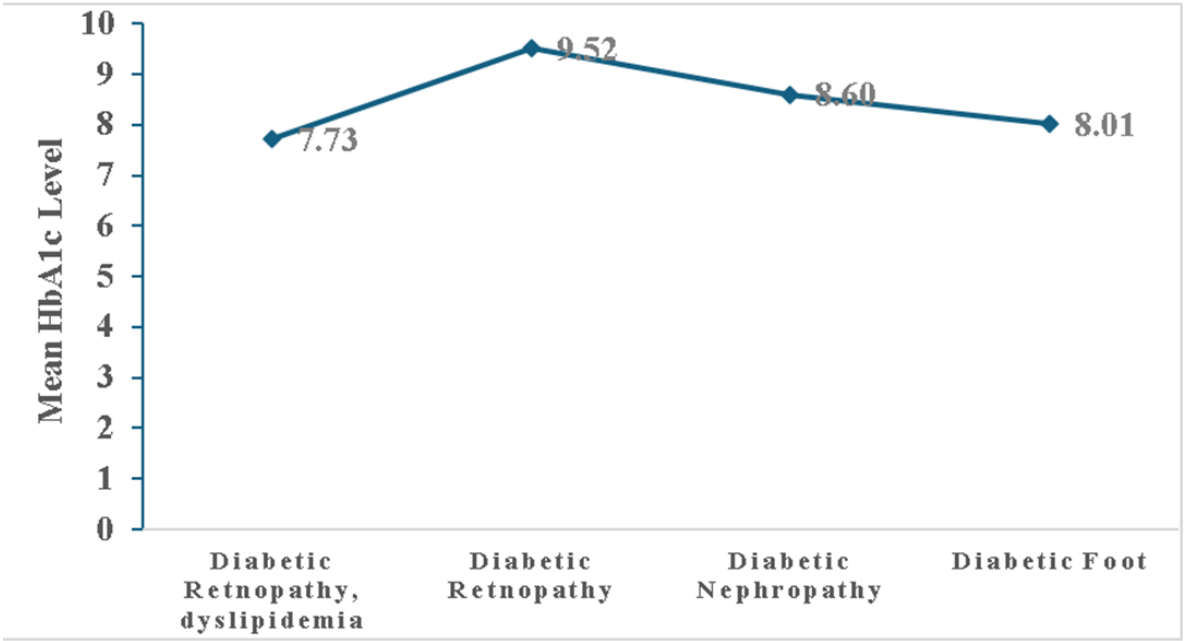

Fig. 4: Line graph depicting the mean HbA1c levels across different complications.

Based on a p-value of 0.009 and a regression coefficient of $\beta = 0.276$, there is a statistically significant association between increased levels of HbA1c and an increased susceptibility to retinopathy. A regression coefficient of $\beta = 0.029$ established a positive connection with age. The obtained p-value of 0.073 suggests that age is emerging as a noteworthy predictor of diabetic retinopathy, however, it did not achieve complete statistical significance and may need more investigation to get comprehensive insight (Table 4).

Table 4: Multinomial logistic regression parameters for different diabetic complications concerning age and HbA1c levels**.**

Complication[a]		Coefficient β with 95% Confidence Interval		Std. Error	Wald	Sig.	Odds ratio
Diabetic Retinopathy and Dyslipidemia	Age	0.014	0.927-1.109	0.046	0.091	0.763	1.014
	HbA1c Level > 6	-0.422	0.319-1.347	0.368	1.320	0.251	0.656
Diabetic Retinopathy alone	Age	0.029	0.997-1.062	0.016	3.213	0.073	1.029
	HbA1c Level > 6	0.276	1.070-1.621	0.106	6.756	0.009	1.317
Diabetic Nephropathy	Age	0.038	0.965-1.117	0.037	1.014	0.314	1.038
	HbA1c Level > 6	-0.049	0.574-1.579	0.258	0.036	0.850	0.952
Diabetic Foot	Age	0.027	0.928-1.138	0.052	0.267	0.605	1.027
	HbA1c Level > 6	-0.293	0.343-1.622	0.396	0.546	0.460	0.746

[a]The reference category is: No Complication, HbA1c = Hemoglobin A1c, sig. = significance, Std. =standard

DISCUSSION

Indicated by raised mean HbA1c levels (Figure 4), the results of this research emphasize the significant incidence of diabetic retinopathy among patients in Al-Baha, especially those with poorly managed diabetes. The obtained findings align with prior research undertaken in different locations in KSA (Alramadan *et al.,* 2018). An investigation conducted by Ghabban *et al.* (2020) revealed a similar correlation between elevated HbA1c levels and the occurrence of diabetic retinopathy and nephropathy in individuals from the Tabuk region of KSA. The findings emphasize the significance of improving glycaemic management and conducting frequent screening for complications, especially in elderly individuals and those with long-term diabetes. Markedly, the research revealed no substantial association between age of the participants and HbA1c levels, indicating that age by itself is not a primary indicator of inadequate glycaemic management. The present discovery challenges the prevailing notion that elderly individuals are more prone to uncontrolled diabetes as a result of extended illness duration and the presence of other medical conditions (Alghamdi *et al.,* 2021; Ewid *et al.* ,2023). Furthermore, further study is required to investigate the possible connections among age, lifestyle variables, and glycaemic control. Further analysis revealed gender disparities, with men exhibiting a greater incidence of diabetic retinopathy. This observation aligns with the results of previous research conducted in Saudi Arabia, indicating that males may have a greater susceptibility to problems as a result of elevated smoking rates and less compliance with diabetes care recommendations. Furthermore, the research emphasizes the difficulties encountered by healthcare practitioners in rural areas, for instance, Al-Baha, where restricted availability of healthcare facilities and delayed diagnosis exacerbate the significant impact of diabetes complications (Aljehani *et al.*, 2023).

Interventions in public health that prioritize patient education, lifestyle change, and early identification of problems are crucial for improving diabetes control and minimizing the likelihood of complications. The incidence of diabetes in Al-Baha regions is indicative of the wider patterns seen in Saudi Arabia. The increasing incidence of diabetes and associated consequences in the area may be attributed to the high prevalence of obesity, sedentary lifestyles, and other risk factors. Specifically in rural regions of Al-Baha, the absence of adequate access to comprehensive diabetes treatment worsens the issue by causing delayed diagnosis and inadequate glycaemic management. The results of this research emphasize the immediate need for strategic public health measures that prioritize early detection, consistent surveillance, and efficient control of diabetes in this specific area (Ewid *et al.*, 2023).

The ANOVA analysis depicted in Table 2 showed that there was no statistically

significant variation in age across various diabetes complications ($F = 1.084$, $p = 0.366$). Nevertheless, there was a notable disparity in HbA1c levels across the groups ($F = 2.766$, $p = 0.029$), indicating that increased HbA1c levels are linked to the occurrence of problems. The correlation analysis in Table 3 revealed a somewhat modest positive correlation ($r = 0.054$, $p = 0.492$) between age and HbA1c levels. This suggests that age by itself is not a robust predictor of HbA1c levels. Table 4 presents the results of a multinomial logistic regression analysis that investigated the association between age, HbA1c, and the probability of acquiring diabetes complications. The findings indicated that age had a marginally significant impact on Diabetic Retinopathy ($\beta = 0.029$, $p = 0.073$), whereas higher HbA1c levels substantially raised the risk ($\beta = 0.276$, $p = 0.009$). No significant correlations were shown between age and HbA1c values for other diabetes problems, although some patterns were seen. These results are consistent with regional studies that emphasize the very high occurrence of diabetic complications in regions where inadequate diabetes control and delayed diagnosis are prevalent. This underscores the significance of enhancing healthcare practices to avoid problems in individuals with diabetes.

Challenges and Future Direction:

The management of diabetic complications in areas with low healthcare resources poses several difficulties that directly affect patient outcomes, healthcare expenditures, and the overall strain on healthcare systems. Some of the most urgent issues encountered in such places are as follows: (i) In places with low resources such as Al Baha, the availability of specialist diabetic treatment, including endocrinologists, nephrologists, and ophthalmologists, is typically restricted; (ii) Regional healthcare infrastructure in resource-constrained areas is typically inadequate to effectively treat chronic diseases for instance, diabetes over an extended period; (iii) a further major obstacle is the scarcity of adequately qualified healthcare practitioners, such as diabetes educators, nurses, and primary care physicians, who possess the necessary skills to proficiently handle diabetes and its associated problems; and (iv) in resource-constrained areas, there is typically a dearth of patient education initiatives specifically targeting diabetes care. Many patients may lack a comprehensive understanding of the significance of lifestyle changes, medication adherence, and frequent testing.

The resolution of these issues necessitates a comprehensive strategy, including persistent public health campaigns, active involvement of the community, and continuous research to formulate customized methods for the management and prevention of diabetes in Saudi Arabia. The significance of integrated care strategies including lifestyle changes, medication, and frequent monitoring to prevent and treat problems is emphasized by recent research. Technological advancements, such as continuous glucose-monitoring and telemedicine, are enhancing the health results of diabetes treatment. To summarize, the risks associated with diabetes provide a substantial worldwide health problem, making a substantial contribution to illness, death, and healthcare expenses. To mitigate these effects, it is essential to implement effective preventive and treatment programs that prioritize early identification and thorough care. Considering health literacy, differential diagnostic criteria, greater sample size and involvement of the large geographical region under study could be future direction for getting deep insight into the study of the prevalence and risk factors complication of diabetes.

Conclusion

The present research offers significant contributions to the understanding of the frequency and factors influencing diabetes complications in Al Baha, Saudi Arabia. A significant proportion, particularly elderly persons with increased HbA1c levels, are susceptible to consequences such as diabetic retinopathy. The well-established

correlation between elevated HbA1c levels and diabetic retinopathy highlights the need to maintain optimal glycaemic management. Males have a greater incidence of problems compared to females; however, the causes of this disparity need more research. Maintaining optimal control of HbA1c levels may decrease the likelihood of problems, emphasizing the need for consistent surveillance and focused therapies for those at high risk. To avoid complications, public health policies should prioritize early identification and thorough care of diabetes. Effective collaboration is necessary to optimize diabetes treatment and promote patient outcomes.

Declarations:

Ethical Approval: Permission was taken from the Institutional Research and Ethics Committee (Scientific Research Committee at King Fahad Hospital in Al-Baha, Saudi Arabia, dated 24-1-2023 (Letter attached separately). Informed consent was obtained from all participants before their inclusion in the study.

Participants were assured of the confidentiality of their data, and all information was anonymized to protect their identities. The data collected were used solely for research purposes and were securely stored to prevent unauthorized access. Participants were informed of their right to withdraw from the study at any time without any consequences. The study posed minimal risk to participants, and no invasive procedures were involved.

Funding: This research was self-funded.

Availability of Data and Materials: The data presented in this study are available on request from the corresponding author. This research contained no personally identifiable information. Data from routine monitoring that had been anonymized were used in this secondary analysis.

Acknowledgements: Not applicable.

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